

## CLAIMS

### WHAT IS CLAIMED IS:

1. An air separation and dirt collection device for a bagless vacuum cleaner comprising:

an elongated container having a cylindrical sidewall, a closed top and a bottom with a central opening;

a tangential air inlet formed in the upper portion of the sidewall;

a central hollow tube extending the full length of the container having an outwardly and downwardly extending skirt disposed on the mid-portion of the tube;

the upper portion of the center tube above the skirt being open to passage of air; and

the lower portion being impervious to the passage of air.

2. The air separation and dirt collection device of claim 1, wherein the outer diameter of the skirt extend to between about 70 to 85 percent of the diameter of the cylindrical container.

3. The air separation and dirt collection device of claim 1, wherein the central tube has an outer diameter between about 35 to 45 percent of the diameter of the container sidewall.

4. The air separation and dirt collection device of claim 1, wherein the bottom is hinged to the sidewall and selectively openable for removal of dirt collected thereon.

5. The air separation and dirt device collection of claim 1, wherein the bottom surrounding the central tube is arcuately curved with the inside of the arc facing the inside of the container.

6. The air separation and dirt collection device of claim 1, wherein the bottom is configured to engage a disk-shaped filter cartridge positioned against the outside of the bottom.

7. The air separation and dirt collection device of claim 6, wherein the filter cartridge includes a radially pleated filter.

8. The air separation and dirt collection device of claim 6, wherein the pleated filter is a HEPA filter.

9. The air separation and dirt collection device of claim 1, wherein the open upper portion of the column includes a screening covering the openings.

10. A vacuum cleaner including an elongated housing including a suction source and a dirty air inlet and having an opening for receiving a dirt separation and collection container, the container comprising:

an elongated container having a cylindrical sidewall, a closed top and a bottom with a central opening;

a tangential air inlet formed in the upper portion of the sidewall;

a central hollow tube extending the full length of the container having an outwardly and downwardly extending skirt disposed on the mid-portion of the tube;

the upper portion of the center tube above the skirt being open to passage of air; and

the lower portion being impervious to the passage of air.

11. A filter cartridge for a bagless vacuum cleaner having a selectively removable air separation and dirt collection container, comprising:

a cylindrical sidewall with an inwardly facing flange at the bottom;

at least one cross-beam extending along a diameter of the opening of the flange; and

a radially pleated filter element positioned in the cylindrical sidewall.

12. The filter cartridge of claim 11, further including a pin at the center of the filter element with a button on the upper end and the lower end extending to the cross-beam.

13. The filter cartridge of claim 11, further including at least one tab extending from the outer wall for positioning within a vacuum cleaner housing.

14. A filter cartridge for a bagless vacuum cleaner having a selectively removable air separation and dirt collection container, comprising:

a cylindrical sidewall with an inwardly facing flange at the bottom;

at least two cross-beams extending along a diameter of the opening of the flange; and

a radially pleated filter element positioned in the cylindrical sidewall.

15. The filter cartridge of claim 14, further including a pin at the center of the filter element with a button on the upper end and the lower end extending to the cross-beams.

16. The filter cartridge of claim 14, further including at least one tab extending from the outer wall for positioning within a vacuum cleaner housing.